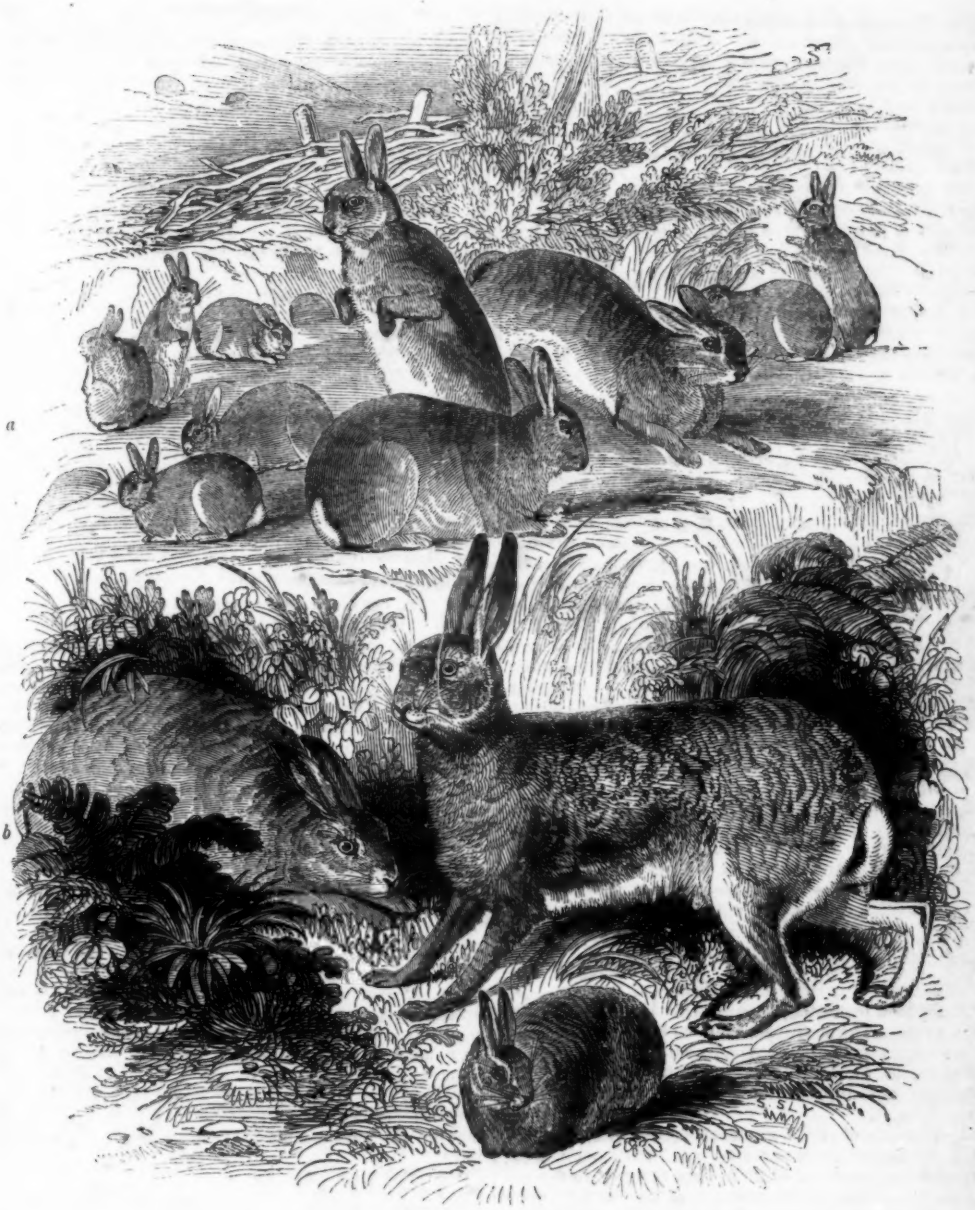

'*a*, Wild Rabbits and Young; *b*, Hares and Leveret.'

THE HARE AND THE RABBIT.

Few animals are better known than the hare and the rabbit, which, though closely allied to each other, and belonging to the Rodent order of quadrupeds, exhibit very different instincts and opposite modes of life. Both, in their natural state, are regarded as private property, at least in our island, and are protected from the unlicensed by the same laws as are the pheasant, partridge, and grouse. The hare (*Lepus timidus*) was one of the "beastis of venerye" among our chase-loving forefathers, and indeed it appears ever to have been regarded as "game," and hunted for the sake of the sport its pursuit affords. The earliest notice of hare-hunting is by Xenophon, in his 'Cynegeticus;' he there enters with evident feelings of pleasure into the details of the sport, and gives many observations on the animal's habits, with which he was clearly well acquainted.

The Romans, like ourselves, considered the flesh of the hare a delicacy. It would seem, however, that the ancient Britons abstained from it on religious

grounds, and we know that it was one of the forbidden meats among the Jews, and also among the Mohammedans.

Timid and defenceless, and surrounded by numerous enemies, exclusive of man, the hare is well endowed with the means of escape. It is both watchful and swift, and its brown fur assimilates in colour with the herbage amongst which it makes its "form."

The external characters of the hare are too well known to need any details: its senses of hearing and sight are very acute; its eyes are large and prominent; its ears very long; its hind limbs elongated, muscular, and formed for speed; its fur consists of hair of two kinds, one straight and of a yellow-brown colour, the other long, wavy, and tipped with black, giving a peculiar mottled appearance. The ears are tipped with black.

The hare is crepuscular and nocturnal in its habits. During the day it crouches in its "form," or habitual resting-place, which is sometimes a spot selected among fern and other herbage, sometimes among the underwood of a "preserve," and sometimes on the ground without other covering or concealment than is given by the unevenness and rough condition of the site. From this "form," a regular track is made by the animal to its adjacent feeding-grounds, for it goes and returns upon its own footsteps. Where hares are plentiful, their tracks leading from preserves to their usual evening haunts are so numerous and definite as to strike the eyes of the most unobservant, and the poacher is at once directed where to place his net or noose. It need not be said that the food of this animal consists exclusively of herbage. Young wheat often suffers extensively from the ravages of hares where numerous; indeed we have known fields of this grain, adjacent to extensive wooded preserves, totally ruined for the season by their nocturnal depredations. Plantations of young trees also are often greatly injured by their habit of gnawing the bark; and the farmer's garden, especially during hard winters, when food is scarce, is very liable to their invasion. At this part of the year hares scatter themselves abroad, and wander farther than during the summer; we have observed, besides, that they are then more diurnal, seeking their food even during the middle of the day; and we have surprised them busy among the culinary vegetables of the garden.

The hare is very playful. Often during a fine moonlight evening, have we, unobserved, been amused and delighted by watching a numerous assemblage of them gambolling and sporting with each other, in the exuberance of animal enjoyment. The least noise was sufficient to check them and render them still and attentive; our appearance would put them to instantaneous flight.

It has been noticed by several writers that the hare takes fearlessly to the water, and will swim well. Instances are recorded of its having resorted to the expedient of swimming across a pool to the shelter of rushes when the hunters' horn had alarmed it; and Mr. Yarrell (in Loudon's 'Magazine,' vol. v.) relates a circumstance, quoted by Mr. Bell, of a hare which came down from the hills to the sea-shore early in the morning, took the water at high tide, and swam to the nearest point of an island a mile distant from the mainland. We have ourselves known them to cross a broad stream, though we have not seen them in the act of swimming.

Wild and timid as this animal is, it is not unsusceptible of domestication. The poet Cowper, as is well known, kept tame hares. Borlase informs us ('Nat. Hist. of Cornwall') that a tame hare in his possession was so familiar as to feed from the hand; its ordinary retreat was under a chair in the parlour, but it would take food and exercise in the garden, returning always to the house. A greyhound and a spaniel were its companions, and the whole three played together, and at night often stretched together on the hearth. It is remarkable, however, that both the greyhound and spaniel were used in the field, and often went out secretly in pursuit of hares by themselves, though they never attempted to injure their playfellow and companion. Sonnini had a tame hare which lived with a hound and two Angora cats; and Dr. Townson had one as playful and familiar as a kitten. A person of our acquaintance had at different times two tame hares, both remarkable for their docility, but of very different tempers; one was very gentle, the other would resent any molestation by biting, which it did very severely, at the same time pertinaciously following up its attack. Cowper's male hare, when annoyed by the cat, would drum upon her back so violently with his fore paws as to compel her to escape and hide herself.

The hare breeds when about a year old, and produces three broods in the course of the spring and summer; but the males and females do not pair nor form permanent associations. The female, after about thirty days' gestation, brings forth from three to five young. These are born covered with fur and with the eyes open, and in less than a month leave their parent and trust to themselves. Leverets, as the young are termed, are peculiarly liable to destruction, and one of their most dangerous foes is the weasel, at the sight of which the helpless creatures seem paralysed with fear. Many instances have occurred in which the weasel has been killed in the act of draining the life-blood from the neck of his victim. The wiles and doubles of the hare, when chased by dogs, are so well known and so often noticed, that we need not here detail them; the more especially as we cannot help connecting them with the fear and agony it experiences while straining every nerve, and using every artifice to escape its pursuers.

The fur of this animal is valuable, and the market is supplied not only with skins collected in our island, but with others imported in abundance from the Continent. The hare is found in our island and throughout Europe, as well as in many parts of Asia. Mr. M Clelland states that it occurs in Assam, but of degenerate size, measuring only from seventeen to nineteen inches in length (instead of twenty-one inches). "It is not esteemed as an article of food; the ears are more uniformly grey than in the European variety" ('Proc. Zool. Soc.,' 1839, p. 152). We suspect the Assam hare here noticed to be a distinct species. We may here remark that the common hare of Ireland, indeed the only hare found there, is specifically different from the English species, *Lepus timidus*, and it is remarkable that its distinctness was not recognised till the year 1833.

"In the year 1833 the Earl of Derby, then Lord Stanley, and president of the Linnæan Society, sent to that Society a specimen of the hare of Ireland, which his Lordship had obtained at Liverpool." This specimen was described by Mr. Yarrell, who subsequently had opportunities of examining others. In the 'Proc. Zool. Soc.,' July, 1833, p. 88, the following passage occurs:—"A specimen was exhibited of the Irish hare recently presented to the Society by Mr. Yarrell, who pointed out the characters by which it is distinguished from the common hare of England and the Continent of Europe. Its head is shorter and more rounded; its ears still shorter than its head; and its limbs less lengthened. The fur also differs essentially from that of the common hare, and is useless as an article of trade."

This species (*Lepus Hibernicus*, Bell; in 'British

Quadrupeds') is somewhat larger than our English hare, with a very short head and very short ears; a uniform soft fur, and comparatively short hind limbs, which do not much exceed the fore limbs in length. That it is a distinct species no one can doubt who has compared it with its English relative, as we ourselves have done repeatedly. There is yet another very distinct species within the limits of our Islands; we allude to the Alpine or varying hare (*Lepus variabilis*). This species is common in the mountain districts of Sweden, Norway, Lapland, and Kamtchatka. It is found in the Alps, and it occurs in the northern parts of Scotland, and is sometimes seen on the mountains of Cumberland. The Alpine hare is intermediate in size between the rabbit and the English hare. In Sutherlandshire and other parts of the Scottish highlands it tenants the summits of the mountains, hiding in the clefts of rocks or among rocky fragments. During the winter lichen is its staple food. At this season it descends to a lower and less exposed station; and its fur, gradually losing the light fulvous-grey of summer, becomes of a snowy white, the tips of its ears (which are shorter than the head) remaining black. Thus, then, we have three distinct species of hare within the limits of the British Islands, namely, the common hare, the Irish hare, and the Alpine hare,—of which, as respects external characters, the two latter more nearly resemble each other than they do the former.

From the hare let us turn to its ally the rabbit (*Lepus Cuniculus*, Linn.). Size excepted, the rabbit closely resembles the hare in all its principal characters. It may, however, be at once distinguished by the comparative shortness of the head and ears, as well as of the hinder limbs; the absence of a black tip to the ears; and by the brown colour of the upper surface of the tail. Its habits and general economy are totally opposite to those of the hare; and its flesh, instead of being dark and highly flavoured, is white, and, though delicate, somewhat insipid, especially that of the tame breed. The flesh of the latter is indeed preferred by some, but we agree with M. Ude in thinking it very inferior.

It would appear that the rabbit is not an aboriginal of our Island, but the date of its introduction is unknown. In the year 1309, at the installation feast of the Abbot of St. Austin's, six hundred of these animals were provided, at the then great cost of 15*l.*; the price of each, sixpence, being that of a pig. It is generally believed that the rabbit was first introduced into Spain from Africa by the Romans, whence it gradually spread, naturalising itself in temperate climates.

This animal is eminently gregarious; and, as is well known, makes extensive burrows, in which it habitually dwells and rears its young. Sandy soils, with a superficial layer of fine vegetable mould clothed with thyme, fine grass, and other herbage, which at the same time afford food and are easily mined, are favourable spots for the increase of the rabbit. They delight in steep sandbanks overhung with brushwood and furze; and we have remarked that when the old red sandstone crops out and is rendered friable, or somewhat decomposed by the action of the atmospheric elements, rabbits are very numerous, burrowing with great facility. They abound also in woods, especially such as clothe the declivities of hills, whence, like the hare, they make incursions into the adjacent corn-lands. A rabbit-warren, that is, a wide sandy heath, or extensive common, devoted to their increase and feeding, when visited at the close of day or by moonlight, affords an amusing spectacle. Hundreds may be seen of all sizes, gambolling and sporting, and chasing each other with astonishing rapidity. When alarmed, they take to their burrows, disappearing as if by magic.

The fecundity of the rabbit is very great. The female is capable of breeding at six months old; and four or five litters, each litter consisting of about five young, are annually produced. We have stated that the hare produces her young clothed, capable of seeing, and soon in a condition to shift for themselves. With the rabbit circumstances are widely different. The young are born blind and naked, and totally helpless. The female forms a separate burrow, at the bottom of which she makes a nest of dried grass, lining it with fur taken from her own body. In this nest she deposits her young, carefully covering them over every time she leaves them. It is not until the tenth or twelfth day that the young are able to see; nor do they leave the burrow till four or five weeks old. The precaution of forming a separate burrow, the entrance of which is concealed, has induced the belief that the male parent will destroy the young, should he chance to discover them. This, however, is not probable. We know indeed that the female domestic rabbit will often devour her offspring, if molested at an early period, urged by the instinctive solicitude for their welfare taking a morbid and unnatural direction; and we believe that the domestic male is apt to destroy them—but from facts like these we can form no safe deductions as to the propensities of the animals in a state of nature. Wild rabbits, for example, pair—a male and female uniting together; but in a state of domestication this instinct is lost.

The rapid multiplication of the rabbit would soon render it, as Mr. Bell observes, one of the greatest scourges of our agriculture, were its destruction not effected by wholesale. It is the prey of the weasel, the stoat, the polecat, the hawk, and the owl; and man, though he protects it, thins its numbers, both for the sake of its flesh and fur. With respect to the latter, the home supply is by no means adequate to the demand, and, as is the case with the skins of the hare, thousands are annually imported from Germany and other parts of the Continent, where myriads of rabbits are bred for this purpose.

In some notes on the 'Mammalia of Ireland,' by W. Thompson, Esq., vice-president of the Nat. Hist. Soc. Belfast ('Proc. Zool. Soc.,' 1837, p. 52), it is stated that "persons who take rabbits in the north of Ireland distinguish two kinds; the one they call the *burrow*-rabbit, the other the *bush*-rabbit. The meaning of the former term is obvious; but of the latter it may be stated that the animal is so designated in consequence of having a *form* like the hare, which is generally placed in bushes or underwood." Something like this we have ourselves observed, though we believe there are not two species. We have in certain parts of England known rabbits solitary (instead of gregarious), and thinly scattered about the steeps of rocky moorlands, crouching under bushes, or among fragments of rock, and having no burrow, which, indeed, in the deep peat would be difficult of excavation, as this is oozy and boggy. In adjacent spots, where the ground permitted it, their burrows were numerous.

Though the rabbit is not capable of the exertion of the hare, it is nevertheless very swift for a short distance; and, as we know by experience, when crossing a path in the woods at full speed is not easily hit by the sportsman. From this circumstance rabbit-shooting is with some a favourite sport, as it serves to display their skill. The usual way of taking rabbits for sale is by ferrets and nets, or by traps of various construction.

The wild rabbit is undoubtedly the origin of our various domestic breeds. Tame rabbits indeed easily resume their natural state of freedom, and return to their instinctive habits. Albinoes are common in a state of domestication, and it often happens that one or two appear in a litter when neither of the parents are

so. Domestic rabbits are not unfrequently fierce: we had a male of the Angora breed, which would fearlessly attack any cat, and always come off victorious. We once saw it lacerate a large cat in a cruel manner with its sharp incisors.

The wild rabbit is about sixteen inches in the length of the head and body, but some of our domestic breeds nearly equal a hare in magnitude. Our sketch represents two hares and a leveret in the foreground, and a group of rabbits beyond.

THE ISLANDS OF ENGLAND

[Concluded from page 416.]

CANVEY ISLAND, FOULNESS ISLAND, MERSEY ISLAND, HORSEY ISLAND, &c.

PROCEEDING to the northward of the river Thames, along the south-eastern district of Essex, there are many low and marshy islands, the principal of which however are named as above.

Canvey Island is situated on the north side of the Thames, midway between Gravesend and Southend; and although five miles long and two miles broad, being merely separated from the mainland, which like itself is low and marshy, by a creek, few persons navigating the river Thames are aware of this being an island, as it presents no such appearance from the main channel of that river: it, like marsh land in general, is mostly devoted to pasturage.

There are several low and swampy islands where the river Crouch disembogues into the sea, the principal of which are *Foulness* and *Wallasea*, the former of which is five miles long and from two to three wide, contains a church, and is divided into two parishes. The creeks and pits connected with the river Crouch, and also the river Blackwater, which forms an estuary that runs as far inland as Malden, yield considerable quantities of oysters.

Mersey Island is nearly as large as Foulness, and is situated ten miles south of Colchester, and between the rivers Blackwater and Coln. It contains two villages, East and West Mersey, whose inhabitants are principally engaged in the oyster fishery. There are two or three smaller islands farther up the estuary of the Blackwater, the largest of which are Northey and Osey. The oysters brought to the London market from the various creeks and banks in the neighbourhood are sold under the name of Colchester oysters.

Horsey Island is situated in a small gulf or inlet, about seven miles south of Harwich. Its situation from the sea may be known by the Walton tower or Naze lighthouse, which stands on the shore of the mainland, two miles east of Horsey Island. There are some other small islands in the same inlet, separated from each other by narrow shallow channels. It may here be observed, that it is entirely owing to the low situation of the south-eastern portion of Essex, and the want of a greater fall in the waters of the various sluggish streams and rivers, that we find so many islands formed in the vicinity of their mouths or communications with the sea; and here, as is usually the case on the coast of low lands of this description, sand and mud banks extend to a distance from the shore, which render the navigation both difficult and dangerous.

From the Essex coast northward there is no detached land met with that deserves the appellation of island, until arriving at the mouth of the river Tees, which separates Yorkshire from the county of Durham; and even then the only low plot of barren ground within the mouth of that river, between the villages of Salt Holme and Seaton Snook, and at high water separated from the north or Durham side of the river by a channel of several hundred yards in breadth; and although in reality an island, it commonly goes by the name of the Salt Holmes, or the Salt Marshes; and except that it serves to impede the navigation of this part of the river, it is a place of little or no importance.

COQUET ISLE.

This is a small island lying a couple of miles east of the mouth of the Coquet river, off the coast of Northumberland. In its greatest extent it is scarcely over half a mile; but it is surrounded by deep water, and some parts of it are elevated to a considerable height above the sea. There are, however, dangerous clusters of rocks, both on the north and south of the mouth of the Coquet river, and hence vessels navigating this part of the coast rarely attempt to find a passage between the mainland and the island; but a lighthouse has been recently erected for the safety of mariners.

Near the village of Warkworth, at a short distance from the mouth of the river, is Warkworth hermitage, consisting of three separate rooms cut out of the solid rock, a work of immense labour for the hands of a solitary recluse. This romantic place is visited by numerous strangers, from whence an excursion is commonly made to Coquet Isle, where there still are the remains of some ancient walls of a building supposed to have been in some way connected with the original occupier of the lonely hermitage.

THE FARNE ISLANDS, WITH HOLY ISLAND, OR LANDISFARN.

These islands have already been described in the 'Penny Magazine;' the former in No. 586 of the new series, and Landisfarn at page 282 of vol. vi. They, like Coquet Island, lie off the coast of Northumberland, in the North Sea; and, like most of that coast, are of a rugged and rocky character; and the Farne Islands in particular, from their distance from the shore, and the dangerous rocks in their vicinity, render the navigation of this portion of the coast both difficult and perilous.

The circuit of England is complete with this brief notice of Holy Island; we commenced with the Isle of Man, situated in the Irish Sea, and opposite to the southern part of the west coast of Cumberland; and having traced our progress southward, and then eastward, and lastly northward, have, on reaching Holy Island, done all that we proposed at the outset, that is, given a short sketch of all the Islands of England; for although there are clusters of rocks among the few miles of English coast northward of Holy Island, they are but mere rocks, and hence do not properly come under the denomination of islands; nor have we omitted, we believe, any name of importance, but have included all that from size or otherwise appeared worthy of attention.

Valley of Cashmere.—How different was the aspect of a village viewed from a distance, and when I entered it. The noble groups of palms, poplars, and fruit-trees; the curious mosque, with its quaint alleys and flower-garden, where the chrysanthemum and tagetes were in full bloom, notwithstanding the lateness of the autumn; the whole scene surrounded with verdant meadows, through which ran a brook with its water-mill, and rows of willows planted along its banks;—such objects as these would lend to the villages a friendly and hospitable look. But in place of this lovely exterior, how mournful a spectacle would frequently meet my eye as I rode into the place. Then all was life; now all death: the mill-wheel stood still, many of the houses were ruinous, while others, with doors and windows open, offered a refuge only to the wild beast. In many a hamlet there was not a mortal to be found, with the exception of an old fed-up Fakir, squatted at the entrance of a mosque, or a Brahmin wasted to a skeleton, conning prayers out of his Veda. The first would rise, screech out *Allaho-Ackbar*, and importune for alms, while the other continued to bear his far greater misery with uncomplaining resignation.—*Hugel's Travels in Cashmere: from Foreign Quarterly Review.*

[V. Greatrakes.—From a portrait prefixed to his account of himself.]

VALENTINE GREATRAKES.

The desire to escape from pain has led mankind, in all ages, to adopt, without sufficient investigation, any means which promised to effect a cure, or to give relief in the most certain and speedy manner. From sacrifices to pagan gods, to gifts to witches, no absurdity has been too great to be adopted; but as the knowledge attendant upon civilization extends, credulity must be acted upon by means less rude, and more in accordance with the position and ideas of society. While in England the shrines of saints are altogether abandoned, in some parts of the Continent their beneficial powers are still confided in, and many well-attested cases are continually published of diseases cured by visiting such places, as is asserted; of such cases there is never any want, whatever be the means proposed for securing a restoration to health, from the affidavits of the common quack, to the exhibitions of the scientific believers in the wonders of animal magnetism. In all cases alike, however, the effects which it is acknowledged are actually produced, are no doubt the results of a powerful action of the imagination, sometimes assisted by accidental circumstances.

Among the disorders particularly subject to the influence of a charm, the most common in England were the king's evil and the ague. Every old woman had a charm for the ague, and in rural districts there are some yet existing; but the more serious evil was only to be remedied by the hand of the sovereign, and hence its name. This power was exercised with much ceremony, a special prayer being provided for it in the Liturgy, till the extinction of the Stuart family. Dr. Johnson, when a child, was touched for that disorder by Queen Anne; and Charles Edward, though only pretending to be Prince of Wales, exercised the power effectually at Holyrood House, in October, 1745. That in many cases persons recovered their health after this process, is not contested, but not so as to the power by which they were effected: at an earlier period it was attributed to the high sanctity vested in the kingly office; by others, to a direct miraculous interference of the Deity; by others, with ourselves, to the influence of the imagination; and recently it has been connected with the phenomena of animal magnetism, and this connection is certainly established to a large extent by the cures recorded to have been performed by Valentine Greatrakes,* who assumed to have become possessed of the power of *touching*, which had hitherto been the prerogative of the sovereign alone.

From his own statement, Valentine Greatrakes (or Gratrax) was a native of Ireland, being born in 1628, at Affane, in the county of Waterford. Having received a decent education at home, he was sent, when about the age of thirteen, to the university of Dublin. Here he remained but a very short time, as the death of his father, and the breaking out of the Irish rebellion in 1641, forced his mother, with the rest of the family, to seek refuge in England. Young Greatrakes continued to live with the family in Cheshire for about six years, when he resolved to return to Ireland, "to recover," as he says himself, in a work to which we shall have occasion to refer more fully hereafter, "the fallen fortunes of my house." He found affairs in such confusion, that he retired to the castle of Capoquin, and "spent a year's time in contemplation..... My soul was as weary of this habitation of clay as ever the galley-slave was of the oar." This love of solitude never entirely left him, and appears to have laid

* Greatrakes is cited as an important instance of the possession and use of animal magnetism, in the second volume of the 'History of Animal Magnetism,' by M. Deleuze

the foundation for the enthusiasm that afterwards developed itself. He subsequently held a commission under the Parliamentarians in Lord Broghill's regiment, and served till they were disbanded in 1656, when he retired to his patrimony, which he seems to have nearly entirely recovered, married, was appointed a magistrate, and filled other official situations. On the Restoration he was deprived of all his offices, and his want of employment probably reproduced his habits of contemplation, and in 1662 he began to feel a sort of impulse or inspiration within him that he could cure diseases by the touch. An accidental case of a scrofulous person applying to his wife as the Lady Bountiful of the village, enabled him to test his belief. In a few days a large tumour burst, discharged itself, and was healed, by the application of his hands; a result not very wonderful, if the tumour had arrived at a proper state. Numerous cases now followed in rapid succession, till at length, about three years later, an epidemic fever broke out in his neighbourhood, and he believed himself called upon to visit the sufferers: he did so, and cured a great number of them. From this time he undertook the cure of all sorts of diseases, and no longer restricted his practice to the king's evil or scrofula. This affair occasioned his being cited into the ecclesiastical court of Lismore, for having pretended to act by the inspiration of the Holy Spirit. This was denied by Greatrakes; but vexation at the process, and an invitation from his old commander Lord Broghill, now Earl of Orrery, to come to London to undertake the cure of the Countess Conway, determined him, in 1666, to quit Ireland. His reputation had preceded him in London, and his reception was extraordinary: Charles II. received him at Whitehall, but his pretensions do not appear to have been admitted or believed in by the court. He now visited the hospitals every day, and is said to have cured many.

Such pretensions did not, of course, remain unnoticed by the press. In the same year, 1666, he was attacked by an anonymous writer, now said to be a Dr. Lobb, a physician of some eminence. In this book, called 'Wonders no Miracles,' Dr. Lobb makes the same objections to the process which were afterwards made against the early uses of animal magnetism, asserting that many of the patients, probably those unrelieved, made "horrid complaints of his indecent and intolerable handlings of all their parts." The book is abusive in its style, and by no means remarkable either for fulness of facts or closeness of reasoning. He accuses Greatrakes of extortion, asserts that "all that he doth is by raising people's imagination;" that "accidents may perform many of his slight cures, and yet he have the credit of it;" that he pretended to derive his power from a voice from heaven; and imputes to him the having made a wound in a man's knee which he did not cure, and which had nearly occasioned the loss of the limb.

Greatrakes's defence, the work to which we have already alluded, was written in reply to this attack. It is entitled 'Valentine Greatrakes' Great and Strange Cures, in a Letter from Himself to the Hon. R. Boyle,' Lond., 1666; and in it he indignantly repudiates the call from heaven, and produces a certificate from the then Bishop of Chester, who says, "The letter which I received from him had no such passages savouring of fanaticism as a pretended voice from heaven and a vision do import." His defence as to the man's leg is curious, and shows, as well as others of his cases, that he used both surgery and medicine as auxiliaries. He says:—"I made a small incision a little above the pan of the knee (as I take it), which was full of small concreted juices like measles; and it may be, as it is usual (where there is any humour), that the place where the orifice was did swell, grow red and fiery, as it must consequently before the tumour comes to a suppuration (which, in laying my hands of it, and spitting thereon, would, as it is usual, immediately have ceased);" and then goes on to deny the gangrene and danger to the limb, appealing to a statement attested to have come from the man himself, with whom he had also been accused of tampering: if he did so, he does not seem to have been very successful, as the man, even by the report of the partial reporter, only denies having used some strong terms of reproach towards Greatrakes; "but when Mr. Greatrakes told him that he doubted not but to allay the inflammation with his hand, the said person desires Mr. G. to excuse him, for the doctor and surgeon had been with him, and applied medicaments unto him; and he durst not take them off, for fear of their displeasure," &c. (p. 14).

But though Greatrakes declines acknowledging a direct miracle in endowing him with his extraordinary power, yet he attributes it not to the temperature of his body, but to the gift of God; for which he gives as a proof, that "before the time of his first receiving the impulse, when, having been afflicted with violent headaches for many years, he had put his hand to his head a thousand times without producing any effect, but now when so troubled, he no sooner puts his hand to his head, but the pain is removed and run out." He also adds, "There are some pains which afflict men after the manner of evil spirits, which kind of pains cannot endure my hand, nay, not even my glove, but fly immediately, though six or eight coats and cloaks be put betwixt the patient's body and my hand" (p. 32); another close approximation to the wonders of Mesmerism.

To this work is affixed an Appendix of certificates of cases occupying fifty pages of small quarto, attested by numerous respectable witnesses, among whom we may mention the Hon. R. Boyle, the natural philosopher, Dr. Ralph Cudworth, the acute metaphysician, Andrew Marvell, the witty and clear-sighted patriot, Dr. Wilkins, and Bishop Patrick. Marvell signs two certificates in one day (April 10, 1666), of cures effected on Dorothy Pocock of a tumour in the breast as large as a pullet's egg, by twice stroking, and of Mr. Nicholson of Cambridge, whose general soreness and pains in the body were "run out" by a similar application. "Some remarks written in the fly-leaf of a copy we have seen (says a writer in the 'Penny Cyclopædia,' vol. v., article 'Robert Boyle') will make a good *resumé* of the evidence:—'In looking over the cases stated in this pamphlet, attested as they are by the most learned and philosophical individuals of that period, it is impossible to deny the existence of the facts as attested, without rejecting *in toto* the evidence of every historical record. Credulity may have distorted and exaggerated the reality, as witnessed by such men even as Boyle, Cudworth, Wilkins, Patrick, &c.; but doubtless the facts are essentially true as reported, and as certainly to be accounted for on the principle of mental and physical sympathy, the imagination of the patient being wrought upon by the powerful emotions excited by expectation. Half a hundred works of the most philosophical and scientific physicians might be cited in confirmation of the astonishing effects of that agitating excitement of the nervous system produced by operating upon the imagination; which perfectly explains all the wonders of animal magnetism.'"

Nor were advocates wanting in his defence. The learned G. H. Stubbes, in a little work called the 'Miraculous Conformist,' pours out an immense deal of quotation from classical and Scriptural sources to prove that similar wonders have been witnessed before, and may therefore be believed now. He describes Greatrakes as a "man of graceful personage and presence;" says in his cures he uses "no charms—no unlawful words," but attributes his power to the temperature of his

body, or, as he himself styles it, "a ferment implanted in his (Greatrakes') body." It is curious to observe a learned man deceiving himself by the use of mere words, without one exact idea, as in the following passage, by which he probably persuaded himself into the credibility of Greatrakes' pretensions:—"One may conceive how, upon the efficacious touch of Mr. Greatrakes, he resuscitating the blood and innate temperarure, the morbifique ferment may be ejected, and the remaining gross body, by a transposition of its texture, and a new impregnation of vitality, be re-imbibed into the blood, and become nutritious" (p. 20).

Unlike Mesmer and some other later pretenders, Greatrakes is favourably distinguished by his disinterestedness. He took no money, and the accusation of extortion only amounts to large sums having been expended by persons coming from great distances without receiving any benefit; and even the attention he attracted by his pretensions seems to have been offensive to his habits of seclusion and contemplation. He therefore returned to Ireland in 1667, where he was still living in 1680, but the time of his death is unknown. There is no record of his having exercised his gift after his return to private life, but it is probable that he did do so among his poorer neighbours, for all the statements unite in attributing to him great benevolence, while he refused money and avoided fame. Thus actuated by none of the common stimulants which produce or foster similar pretensions in general, he departed, leaving his gift to be succeeded by some other pretension more novel though not more probable, to be again believed in by a public still credulous though continually deceived.

THE LAC INSECT AND ITS PRODUCE.

THERE is a substance of frequent use in the arts, the nature and source of which are but little known even to those who use it—we mean *lac*.

Lac is a compound substance—sometimes called a gum, but erroneously, for it is neither a gum nor a resin—prepared by the female of a minute insect, known by the several names of the *coccus ficus*, *coccus lacca*, and *chermes lacca*. These insects are found on several species of trees in and near the East Indies, by which they appear to be nourished, and to the succulent extremities of the young branches of which they affix themselves. Around their edges they are environed by a tenacious semi-pellucid liquid, which seems to glue them to the branch; and it is the gradual accumulation of this liquid, forming a complete cell for each insect, which produces the substance called *gum-lac*. When the cells are formed, the insect has the appearance of an oval, smooth, red bag, without life, about the size of a small cochineal insect, and full of a beautiful red liquid. When the eggs are hatched within the cell, the young insects, after feeding upon and consuming this red liquid, pierce a hole through the cell, and issue forth to open day one by one, leaving a white membranous substance in the cell. The lac thus appears to furnish a kind of nest or dwelling for the young insects in their earliest state.

Dr. Roxburgh once had some small branches of the *mimosa cinerea* given to him, on which were some pieces of very fresh-looking lac; and he carefully watched the processes which ensued. At the end of fourteen days, he observed myriads of exceedingly minute animals creeping about the lac, and more still issuing from small holes over the surface of the cells. The insects, when single, ran about pretty briskly; but in general they are so numerous as to be crowded over one another. On opening the cells, he found that the substance of which they were formed bore much resemblance to amber; the external covering was remarkably strong and resisting, but the partitions between the cells were thinner. The cells were in general irregular squares, pentagons, and hexagons, about an eighth of an inch in diameter, and a quarter deep; and no communication existed from one to another. The cells which were opened during the issue of the minute insects seemed to be occupied in two different ways. One half of each cell contained a small bag filled with a thick red jelly-like liquor, replete with what Dr. Roxburgh considered to be eggs; the bag adhered to the bottom of the cell, and had two necks, which passed through perforations in the external coat of the cell. The other half of each cell had a distinct opening, and contained a white substance like a few filaments of cotton rolled together, and also numbers of the insects themselves ready to make their exit. On the following day the insects continued issuing from their cells in great numbers, of a deepened red colour, and more lively in their movements than those before observed. The insects were contained in a wide-mouthed bottle, and small twigs of the *mimosa* and other trees were put in the bottle with them; and on the third day small winged insects were seen to issue from the lac, evidently forcing for themselves a passage with some struggling.

The lac of which the cells are formed thus seems to be a residue which, after serving as a nest for the young, is left as valueless by the insects. In a commercial point of view there are four sorts of lacs, but all are derived from these cells. In the first place there is the *stick-lac*, which is the lac in its natural state, obtained in pretty considerable lumps, with much of the woody parts of the branches on which it is formed adhering to it; secondly, the *seed-lac* is a collection of granules, obtained from the former after the colouring-matter has been extracted by water; *lump-lac* is the seed-lac after it has been purified by fire, and formed into cakes; lastly, *shell-lac* is the purified lac, or the cells liquefied, strained, and formed into transparent laminæ.

The stick-lac is collected in Eastern countries twice a year; and the only trouble in procuring it is in breaking down the leaves and branches, and carrying them to market. When the twigs or sticks are large, or only partially covered, the lac is frequently separated from them to lessen the expense of freight to Europe. The shell-lac is produced from this crude material by the following processes: It is broken into small pieces, picked from the branches and sticks, and put into a sort of canvas bag or tube, about four feet long and six inches in circumference. Two of these bags are in constant use, and each of them is held by two men. The bag is placed over a fire, and frequently turned, till the lac is liquid enough to pass through its pores, when it is taken off the fire, and squeezed by two men in different directions, dragging it along the convex part of a plantain-tree prepared for the purpose. While this is doing, the other bag is being heated, to be treated in the same manner. The dragging of the bags over the surface of the plantain-tree has the effect of depositing a layer of the melted lac upon it; and the thickness of this layer depends on the degree of pressure exerted on the bag. The fineness of the resulting shell-lac depends on the fineness or porosity of the bag through which it is strained.

The native Indians employ *lac* in a great variety of ways, as a material for ornaments, as a varnish, and as a dye. They use the lump-lac in making *bangles*, or ornaments in the form of rings, for the arms of the lower class of females; the best shell-lac being used in manufacturing these ornaments for the superior classes; as also beads, spiral and linked chains for necklaces, and other ornaments. As a varnish, the lac

is used in a curious manner: it is first formed by melting small pieces together into sticks, something like our sealing-wax, which are coloured with cinnabar or any other pigment. The box, cabinet, or piece of wood which is to be varnished is heated by means of a charcoal fire, and then rubbed over with a stick of lac; the smooth regularity of the lac being ensured by rubbing it over with a piece of folded plantain-leaf. Ornamental figures are frequently formed of coloured lac drawn over the heated surface of the article to be ornamented. In ornamenting their images and religious houses, the Hindoos frequently make use of very thin beaten lead, which they colour with various varnishes made of coloured lac; the leaf of lead is laid upon a smooth iron heated from below while the varnish is being spread on it.

Lac is sometimes curiously applied in the making of the polishing grindstones used by the lapidaries of the East. The natives take three parts of river sand to one of seed-lac, mix them in a vessel over a fire, and form the mass into the shape of a grindstone. A square hole being made in the centre of the grindstone, it is fixed on an axis; and by warming the surface of the lac, the grindstone may be brought to a right form. The grindstones vary in the proportion and quality of the sand mixed with the lac, according as they are to be employed for cutting or for polishing. It will be evident that the lac here plays no other part than that of a cement whereby the particles of sand are combined into a solid substance.

When stick-lac is reduced to powder, and water is poured on it, the liquid immediately begins to be tinged with red, and the addition of heat produces a deep-coloured crimson solution. This colouring substance is the source of much of the value which attaches to lac; and enables it to be used both as a coloured pigment and as a dye by the natives of India. The colouring-matter, which is extracted in various ways, is formed for sale into small square cakes or pieces, like those of indigo, which obtain the name of lac-dye, lac-lake, or cake-lake. These cakes when broken appear dark-coloured, shining, smooth, and compact, and when scraped or powdered present a bright red colour, approaching to that of carmine. The seed-lac and the lump-lac are less used as a colouring than as a kind of varnish, for they consist principally of the resinous portions left after the colouring-matter has been obtained. Mr. Kerr describes the mode of native dyeing with the lac-dye as follows:—They take one gallon of the red liquid; and add to it three ounces of alum. Three or four ounces of tamarinds are boiled in a gallon of water, and strained. Equal parts of the red liquid and of the tamarind-water are then mixed over a brisk fire; and the pieces of silk or cotton-cloth to be dyed are dipped and wrung alternately, until they have received a proper quantity of the dye. To increase the colour, they increase the proportion of the red liquid, and lengthen the time during which the cloth remains immersed in it. To render the colour binding in the silk, a handful of the bark called "load" is boiled in a little water, and the silk dipped in the decoction several times.

It is partly as a dye and partly as a varnish that lac comes to this country; the latter being used in the manufacture of some kinds of liquid varnish, in the manufacture of the best sealing-wax, and, within the last few years, in the hat manufacture. As a dye, the colour given by lac is less beautiful, but more durable than that given by cochineal. Some persons have recommended its adoption as a vehicle for colours in painting, for which it appears to have certain favourable qualities.

Mr. Crawfurd says, "The lac insect exists in most of the forests of the Indian Islands, but especially in those of Sumatra and the Malayan Peninsula. Its produce is however inferior to that of Bengal, and especially of Pegu, which countries chiefly supply the large consumption of the market of China, while the lac of the Indian Islands is principally confined to home consumption." Mr. Milburn states that it is produced on the cultivated mountains on both sides of the Ganges, in such abundance, that were the consumption ten times greater than it is, the markets might be supplied.

Phosphoric Lichens.—Several varieties of lichens, particularly the *subcorticalis*, the *subterranea*, and the *phosphorea*, are occasionally phosphorescent, and are more or less luminous in the dark. They often spread themselves to a great extent in caverns and mines, where they create an extraordinary degree of splendour. It is said that these lichens are so abundant and yield so much light in the coal-mines in the vicinity of Dresden, as at first to dazzle the eyes of the beholder.—*M. Erdman.*

Balsas of Peru.—As the heavy surf occasioned by the swell of the Pacific renders landing with boats always dangerous, and often impracticable, *balsas* are used along this coast. These balsas differ in materials and form on the different parts of the coast. In Chile and the southern coast of Peru, the balsa is a kind of sea-balloon, consisting of seal-skins made air-tight, and inflated like a bladder: they are so light that they float over the heaviest surf without danger. Two of these bladders are fastened together, and a sort of platform made of cane is fixed on them. These balsas hold from two to three persons. The balsa of the northern coast of Peru is a raft consisting of nine logs of the cabbage-palm secured together by lashings, with a platform raised about two feet, on which the goods are placed. They are employed for coasting along the shore, and have a lug-sail, which is most used in landing. The wind being along the shore enables them to run through the surf and on the beach with ease and safety. At Lambayeque, where the surf is very heavy, a kind of balsa is used called *caballito:* it consists of bundles of reeds fastened together and turned up at the bow. Being very light, it is thrown on the top of the surf upon the beach, and the fishermen who use them jump off and carry them on their shoulders to their huts. It seems that each bay or road has its peculiar balsa.—*Penny Cyclopædia.*

Steppes of the Ukraine.—The uniformity of the landscape is well calculated to weary the traveller, more particularly such a traveller as my companion, who had explored nearly all the steppes of the vast Russian empire; but, for my part, I found the journey anything but tedious. The consciousness that I had at length reached the genuine steppe, the scene of so many yet unexplained movements of the human race, was alone sufficient to keep my mind in an agreeable state of excitement. These boundless grassy plains, on which blade succeeds to blade for hundreds of leagues, and on which a calf may eat his way from the base of the Carpathian Mountains, till he arrive a well fattened ox at the foot of the great Chinese wall, afforded a never-ending theme for my imagination. I was never tired of contemplating the countless herds of oxen and wild horses, and the flocks of fat-tailed sheep. Even the vast extent, the apparent endlessness of the steppes was to me a source of pleasurable fancy. The horses gallop away, and the carriage rolls lightly over the ground, yet we seem never to stir from the spot. On we fly, yet all around remains unchanged. The optical illusions, also, that frequently present themselves, contribute not a little to the traveller's amusement. Sometimes a solitary figure, a man or an ox, will present itself on the edge of the horizon, as a huge spectral form, as though it were raised on stilts of enormous dimensions, or floated unsupported through the air. The appearance of lakes and large masses of water presented at times so complete an illusion, we could scarcely persuade ourselves that we did not behold some wide-spreading inundation before us. More particularly when there happened to be herds of cattle near, for the legs of the cows seemed to disappear in the water. *Ettot tolko ot sontse, tak pokasivayet* (it is the sun makes it look so; it is no real water), said our postilion, and he went on to assure us that the cattle were never led astray by the appearance of a mirage, which, by the scent alone, they were able to distinguish from real water.—*Kohl's Travels in Southern Russia; from the Foreign Quarterly Review.*